UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
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ART UNIT	PAPER NUMBER
2112	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
	10/723,133	JACOBSEN ET AL.
Office Action Summary	Examiner	Art Unit
	Joseph D. Torres	2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *11/21/2008*.
2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1 and 3-41* is/are pending in the application.
   4a) Of the above claim(s) *10-41* is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) *1 and 3-9* is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on *25 November 2003* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All   b) ☐ Some * c) ☐ None of:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____.
      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I, claims 1-9, in the reply filed on

05/27/2008 is acknowledged.

Claims 10-41 are withdrawn from further consideration pursuant to 37 CFR

1.142(b) as being drawn to nonelected inventions, there being no allowable generic or

linking claim. Election was made **without** traverse in the reply filed on 05/27/2008.

Response to Arguments

Applicant's arguments filed 11/21/2008 have been fully considered but they are

not persuasive.

The Applicant contends, "Information is coded in the present application by selecting

codewords that are balanced in order to provide a final codeword having the same or

similar codeword error probability as previous codewords (Specification, par. [0043]).

For instance, the codewords may be "full length (D) unshortened codewords" up to - but

not including - the last one or two codewords, with the last one or two codewords

allowed to be shorter than prior codewords (Specification, par. [0036]-[0040]; and FIG.

5). In contrast, Pope, col. 4, lines 31-34, cited by the Examiner, teaches a method

wherein information is coded with each codeword being shorter than the previous

codeword, e.g., 60% of the previous codeword (FIG. 2; and col. 3, line 55 - col. 4, line

6). Although Pope discloses another embodiment of encoding information using

codewords of same or similar sizes (FIG. 4), Pope does not balance the codeword error

rate among all codewords - rather, Pope discloses that the coding of the last codeword

is selected for reason of lower latency (col. 4, line 60 - col. 5, line 15)".

The Examiner disagrees and asserts one cannot show nonobviousness by attacking

references individually where the rejections are based on combinations of references.

See IN RE KELLER, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); IN RE MERCK &

CO., 800 F.2d 1091, 231 USPQ 375 (FED. CIR. 1986).

Nieminen, in and analogous art, teaches identifying a length of information to be sent in

a turbo code (col. 3, lines 25-30 in Nieminen clearly suggest identifying a length of

information to be sent in a turbo code of length N_{TB} by calculating $R_{DATA}*T_{DELAY}$ where);

and encoding the information to be sent in the turbo code into one or more codewords

(Figure 1 and 2 of Nieminen teaches encoding the information of length $R_{DATA}*T_{DELAY}$ to

be sent in the turbo code of length N_{TB} into one or more codewords), the step of

encoding comprising: balancing codeword lengths to be approximately equal for at least

a portion of the one or more codewords, before the last codeword (Figure 1 and 2 of

Nieminen teaches balancing codeword lengths N_{TB} to be approximately equal for at

least a portion of the one or more codewords, before the last codeword); and setting

code rates of the one or more codewords such that the last codeword has a lower code

rate than the first codeword (code rate is defined as data length over codeword length

N_{TB}: since the data length of the last codeword is smaller than that of the previous

codewords and since codeword length N_{TB} is fixed, the code rate of the last codeword is

lower), such that in a manner to achieve a similar codeword error probability is achieved for each codeword considering (since each of the codewords is the same length, the bit error probability is the same for all codewords, Note: Bite error rate/probability is the average number of errors in a fixed interval and hence does not vary over a fixed interval) available decoding time for decoding a last codeword will be less than available decoding time for decoding a first codeword (since the length of a decoding Trellis is determined by the length of the systematic user Data and since the last codeword has less user data, the Trellis for the last codeword is shorter and since codeword are decoded over the length of the trellis for the codeword, the decoding time for the last codeword will be so less).

However Nieminen does not explicitly teach the specific use of a block code.

Pope, in an analogous art, teaches use of a block code (Col. 4, line 52 in Pope; Note: an LDPC code is a block code).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Pope; Stephen P. et al. (US 6724327 B1, hereafter referred to as Pope) in view of

Nieminen; Esko et al. (US 6437711 B1, hereafter referred to as Nieminen).

35 U.S.C. 103(a) rejection of claim 1.

Nieminen, in and analogous art, teaches identifying a length of information to be sent in

a turbo code (col. 3, lines 25-30 in Nieminen clearly suggest identifying a length of

information to be sent in a turbo code of length N_{TB} by calculating $R_{DATA}*T_{DELAY}$ where);

and encoding the information to be sent in the turbo code into one or more codewords

(Figure 1 and 2 of Nieminen teaches encoding the information of length $R_{DATA}*T_{DELAY}$ to

be sent in the turbo code of length N_{TB} into one or more codewords), the step of

encoding comprising: balancing codeword lengths to be approximately equal for at least

a portion of the one or more codewords, before the last codeword (Figure 1 and 2 of

Nieminen teaches balancing codeword lengths N_{TB} to be approximately equal for at

least a portion of the one or more codewords, before the last codeword); and setting

code rates of the one or more codewords such that the last codeword has a lower code

rate than the first codeword (code rate is defined as data length over codeword length

N_{TB}: since the data length of the last codeword is smaller than that of the previous

codewords and since codeword length N_{TB} is fixed, the code rate of the last codeword is

lower), such that in a manner to achieve a similar codeword error probability is achieved

for each codeword considering (since each of the codewords is the same length, the bit

error probability is the same for all codewords, Note: Bite error rate/probability is the

average number of errors in a fixed interval and hence does not vary over a fixed

interval) available decoding time for decoding a last codeword will be less than available

decoding time for decoding a first codeword (since the length of a decoding Trellis is

determined by the length of the systematic user Data and since the last codeword has

less user data, the Trellis for the last codeword is shorter and since codeword are

decoded over the length of the trellis for the codeword, the decoding time for the last

codeword will be so less).

However Nieminen does not explicitly teach the specific use of a block code.

Pope, in an analogous art, teaches use of a block code (Col. 4, line 52 in Pope; Note:

an LDPC code is a block code).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine Nieminen with the teachings of Pope by including use

of a block code. This modification would have been obvious to one of ordinary skill in

the art, at the time the invention was made, because one of ordinary skill in the art

would have recognized that use of a block code would have provided an iterative, near-

channel-capacity lower-latency code (Col. 4, line 52 in Pope).

35 U.S.C. 103(a) rejection of claim 3.

Col. 4, line 52 in Pope.

35 U.S.C. 103(a) rejection of claim 4.

Col. 4, line 49-56 in Pope.

35 U.S.C. 103(a) rejection of claim 5.

The Abstract in Nieminen teaches an dividing data into blocks of equal size upper limit

X. Clearly, if the length of the data is less than or equal to X bits (where X is a positive

integer), then one codeword is used. Nieminen teaches that if the length is greater than

X bits and less than or equal to Y=2X bits, then two codewords are used and Figure 2 in

Pope teaches that the information to be sent in the block code is divided substantially

equally between the two codewords. The Abstract in Nieminen clearly suggests if the

length is greater than Y=2X bits, then three or more codewords are used and col. 4,

lines 36-41 in Pope teaches a code rate of the last codeword is set lower than a code

rate of the first codeword

35 U.S.C. 103(a) rejection of claim 6.

Figure 2 in Pope.

35 U.S.C. 103(a) rejection of claim 7.

The Abstract in Pope recites "codewords may be of different lengths and/or different

code rates, which clearly encompasses code rates of two last codewords to be lower

than a code rate of the first codeword. Note: col. 4, lines 38-43 teach that lower code

rates are used to compensate for shorter times to decode a particular codedword, which

clearly suggests the use of lower code rates at the end of a data transmission when

shorter times occur.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Pope; Stephen P. et al. (US 6724327 B1, hereafter referred to as Pope) in view of

Nieminen; Esko et al. (US 6437711 B1, hereafter referred to as Nieminen) in further

view of Zhuang; Xiangyang et al. (US 6757337 B2, hereafter referred to as Zhuang).

35 U.S.C. 103(a) rejection of claims 8 and 9.

Pope and Nieminen substantially teaches the claimed invention described in claims 1-7

(as rejected above).

However Pope and Nieminen does not explicitly teach the specific use of an antenna or

OFDM.

Zhuang, in an analogous art, teaches use of an antenna or OFDM (col. 4, lines 10-11

and Figure 1 and 2 in Zhuang).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify Pope and Nieminen with the teachings of Zhuang by

including use of an antenna or OFDM. This modification would have been obvious to

one of ordinary skill in the art, at the time the invention was made, because one of

ordinary skill in the art would have recognized that use of an antenna or OFDM would

have provided Multiple-Input-Multiple-Output (MIMO) detection and decoding

communication (col. 1, lines 5-10 in Zhuang).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Joseph D. Torres whose telephone number is (571)

272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jacques Louis-Jacques can be reached on (571) 272-6962. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

                                                  Joseph D Torres
                                                  Primary Examiner
                                                  Art Unit 2112

/Joseph D Torres/
Primary Examiner, Art Unit 2112